

WHAT IS CLAIMED IS:

1 1. A telescoping fork for the front wheel of a two wheeled vehicle, the
2 fork comprising:
3 a pair of outer tubes that each have a top end and a bottom end;
4 an upper structural member connecting the outer tubes; and
5 a lower structural member connecting the outer tubes, wherein the lower
6 structural member is spaced below the upper structural member, wherein the upper structural
7 member and the lower structural member are configured to be connected to a steering
8 mechanism;

9 wherein each outer tube tapers outwardly, both externally and internally, in a
10 direction from the bottom end toward the lower structural member and from the top end
11 toward the lower structural member.

1 2. A fork as in claim 1, wherein the lower structural member has a hollow
2 box sectional shape.

1 3. A fork as in claim 1, further comprising a pair of inner tubes disposed
2 to slide within the pair of outer tubes, wherein the inner tubes each have a bottom end and a
3 top end, and wherein the bottom ends of the inner tubes extend out of the bottom ends of the
4 outer tubes and are configured to connect to a wheel axle.

1 4. A fork as in claim 3, further comprising a single bushing disposed
2 between each outer tube and each inner tube, wherein the bushings are located at the bottom
3 ends of the outer tubes, and wherein the bushings have a length that is longer than a diameter
4 of the inner tube.

1 5. A fork as in claim 3, further comprising a bracket disposed at the
2 bottom end of each inner tube, wherein the brackets are adapted to clamp a front wheel axle
3 to the inner tubes.

1 6. A fork as in claim 5, wherein at least one of the brackets has a mount
2 for receiving a disk brake caliper.

1 7. A fork as in claim 1, further comprising a handle bar clamping device
2 coupled to the upper structural member.

1 8. A fork as in claim 1, wherein the upper structural member incorporates
2 a handle bar clamping device.

1 9. A fork as in claim 3, further comprising a fluid damping system
2 disposed within at least one of the inner tubes.

1 10. A fork as in claim 9, wherein the fluid damping system comprises a
2 hollow damper rod coupled to the top end of the outer tube and extending into the inner tube,
3 a sealing member disposed to create a seal between the inner tube and the damper rod near
4 the top end of the inner tube; and a damper piston valve coupled to the damper rod that seals
5 against the inner tube.

1 11. A fork as in claim 10, wherein the fluid damping system further
2 comprises a lock tube disposed within the damper rod, wherein the damper rod has at least
3 one upper orifice and one lower orifice, and wherein the lock tube is rotatable from the top
4 end of the outer tube to close the lower orifice, and further comprising a sleeve disposed over
5 a top portion of the damper rod and the lock tube, wherein the sleeve is configured to close
6 the upper orifice as the upper tube extends relative to the lower tube, such that further
7 extension is prevented if the lower orifice is closed by the lock tube.

1 12. A fork as in claim 11, wherein the damper piston valve is a one-way
2 valve that permits fluid flow in an upward direction upon compression of the inner tube into
3 the outer tube.

1 13. A fork as in claim 3, wherein at least one of the inner tubes has a
2 closed end, and further comprising a sealed piston inside the inner tube that is connected to a
3 rod that extends and attaches to the top end of the outer tube, and a gas within the inner tube
4 that is compressed by the piston to provide a biasing effect.

1 14. A fork as in claim 13, further comprising a spring disposed between
2 the bottom end of the inner tube and the piston to provide a biasing effect.

1 15. A fork as in claim 13, wherein the rod is hollow to permit the gas
2 pressure in the inner tube to be adjusted by a valve at the top end of the outer tube.

1 16. A fork as in claim 10, further comprising a stop positioned between the
2 top of the outer tube and the top of the inner tube to stop compression of the inner tube into
3 the outer tube.

1 17. A fluid damping system, comprising:
2 a tube member having a closed end and an open end;
3 a hollow damper rod extending through the open end of the tube member;
4 a damper piston valve coupled to the damper rod and movable within the tube
5 member, wherein the damper piston valve comprises a one-way valve that permits fluid flow
6 in an upward direction upon compression;
7 a sealing member disposed to create a seal between the tube member and the
8 damper rod near the top end of the tube member;
9 a sleeve disposed over a top portion of the damper rod;
10 wherein the damper rod includes at least an upper orifice and a lower orifice
11 that are located between the sealing member and the piston valve to permit fluid flow past the
12 piston valve by passing through the damper rod during extension of the damper rod out of the
13 tube member, wherein the lower orifice is manually closable, and wherein the sleeve is
14 configured to close the upper orifice upon extension such that further extension is limited if
15 the lower orifice is closed.

1 18. A system as in claim 17, further comprising a lock tube disposed
2 within the damper rod, and wherein the lock tube is manually rotatable externally of the tube
3 member to close the lower orifice to limit the amount of extension.

1 19. A system as in claim 18, wherein the sleeve comprises an extension of
2 the sealing member.

1 20. A releasable clamp system for clamping a wheel axle of a wheel to a
2 two wheeled vehicle, comprising:
3 a frame member defining a shape that is adapted to receive a portion of the
4 wheel axle;
5 a cover plate pivotally attached to the frame member that is adapted to receive
6 another portion of the wheel axle, wherein the cover plate is movable between a closed
7 position where the frame member and the cover plate generally encompass and clamp the
8 wheel axle, and an open position that permits removal of the wheel axle;

9 a lever pivotally attached to the cover plate; and
10 a hook member pivotally attached to the lever, where the hook member is
11 configured to hook onto the frame member and be pulled by the lever to secure the cover
12 plate to the frame member when the cover plate is moved to the closed position.

1 21. A clamp system as in claim 20, wherein the cover plate is pivotally
2 attached to the top of the frame member to permit the wheel axle to be vertically released
3 downward from the frame member.

1 22. A clamp system as in claim 20, wherein the frame member and the
2 cover plate each have inner surfaces that are adjacent to the wheel axle when the cover plate
3 is in the closed position, and wherein the inner surfaces and the wheel axle are each semi-
4 circular in geometry.

1 23. A clamp system as in claim 20, wherein the hook member is T shaped
2 in geometry, and wherein the frame member includes a shoulder with a slot into which the
3 hook member is receivable.

1 24. A clamp system as in claim 23, wherein the hook member comprises
2 two pieces that are threadably connected together such that the clamping force applied to the
3 wheel axle is adjustable by rotating the two pieces relative to each other.

1 25. A clamp system as in claim 20, wherein the cover plate is pivotally
2 attached to the frame member at a pivot point, wherein the lever is pivotally attached to the
3 cover plate at a pivot point, and further comprising torsion springs at each of the pivot points
4 to hold the cover plate in the open position when not clamping the wheel axle.

1 26. A clamp system as in claim 20, further comprising a mount on the
2 frame member that is adapted to mount a disk brake caliper to the frame member.